

# AMBLE Ramble

Newsletter for Lake Michigan Volunteer AMBLE (Avian Monitoring for Botulism Lakeshore Events)

## 2012 • Summary

### Contents

- A Heavy Toll on Loons
- Wisconsin Data Summary
- Comparing Wisconsin to Michigan
- Botulism in the News
- USGS-EPA Challenge Grant Monitoring Update
- AMBLEing through High School

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## A Heavy Toll on Loons

Written by Damon McCormick, Co-Director of Common Coast Research & Conservation

Echoing a pattern documented since the 2006 reemergence of type E botulism on Lake Michigan, in 2012 the waterbird species most impacted by the toxin was the Common Loon. In Emmet County, at the top of the Lower Peninsula of Michigan, an average of eight dead loons were documented per mile of shoreline. Along the beaches of Sleeping Bear Dunes National Lakeshore in Michigan, the average was 18 loon carcasses per mile. And within a seven-mile transect near the eastern Upper Peninsula community of Gulliver, where I spent a sizable portion of my autumn, the season's tally was 302 deceased loons, or 43 per mile of shoreline.

*Continued on page 2....*



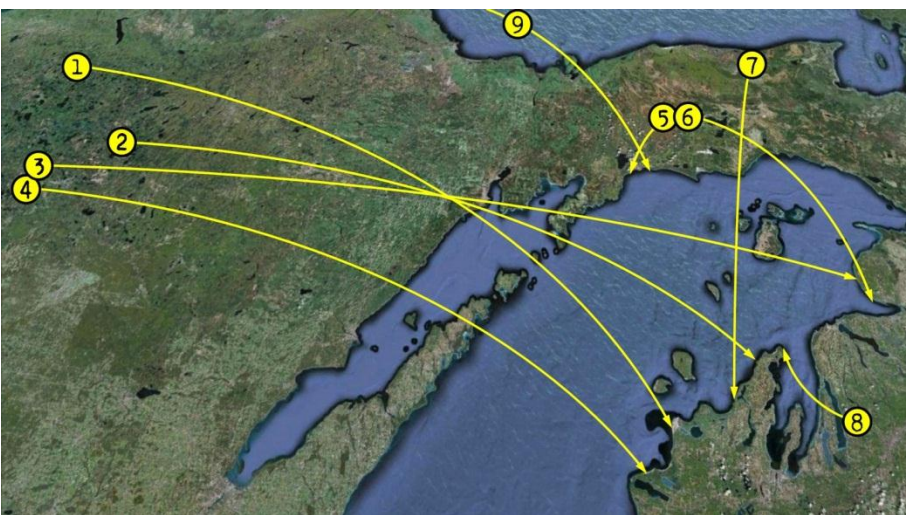
This color-marked male at Seney National Wildlife Refuge receives a brief respite from his chick-rearing duties in July 2012. In early September he migrated from his Refuge territory, and in late October was found dead 27 miles to the southwest along the Lake Michigan shoreline, a likely victim of type E botulism poisoning [see arrow 5 on map on page 2]. Since 2007, at least five Common Loons from Seney have perished on northern Lake Michigan during autumn migration. Photo credit: Damon McCormick

## A Heavy Toll on Loons (*continued...*)

Written by Damon McCormick, Co-Director of Common Coast Research & Conservation

This extreme level of carnage extended westward to the port city of Manistique, Michigan, where in late October a beachwalker discovered the carcass of a color-marked loon (pictured live on page 1) from Seney National Wildlife Refuge, 27 miles to the northeast. This was a breeding male that had been banded in 2006 by our nonprofit, Common Coast. During the 2012 season, he raised one chick on his Refuge pool before departing in September for migration (see arrow 5 on the map below). His neighbor on the adjacent Seney territory, a 12-year-old that was banded as a Refuge chick in 2000, also migrated in September, and was also ultimately found dead on the Lake Michigan shoreline (arrow 6). These Seney males were two of the nine color-marked loons discovered on the northern third of the Lake in 2012, all likely victims of botulism poisoning. Reflective of the primary Midwestern regions for research involving banded loons, eight of these individuals nested in northern Wisconsin or Michigan; the ninth, however, summered over 900 miles to the northwest in central Saskatchewan (arrow 9). Her discovery emphasizes the vast net cast by the Great Lakes as a migratory conduit for Common Loons, and thus underscores the vast geographic breeding range imperiled by the widespread presence of the toxin within the Lakes.

The 2012 total of confirmed loon mortalities in northern Lake Michigan was 1,570. Most of these birds were documented within regularly monitored areas, which represent only a small percentage of the total shoreline in the region. Significantly, almost all of the deceased were breeding adults, which from the standpoint of long-term population viability represents a more damaging scenario than one in which juvenile loons formed a portion of the casualties. As the season's tally – which does not include botulism deaths in any of Lakes Huron, Erie, and Ontario – rivals the figure of roughly 900 breeding pairs left in the state of Michigan, one component of 2012 research in the Upper Peninsula involved sample collection with the intent of ultimately determining the geographic origins of these adults... in other words, just how many were locals? But as I visited a Gulliver shoreline frequently littered with waterbird carcasses, it was difficult – on the evidence of both our banded Michigan recoveries and the sheer scale of the die-off – not to mentally



Nine deceased color-marked Common Loons were discovered along the northern Lake Michigan shoreline during the autumn and early winter of 2012; all were migrating adults that had departed from breeding territories in northern Wisconsin (arrows 1-4), the eastern Upper Peninsula (arrows 5-7), the northern Lower Peninsula (arrow 8), and central Saskatchewan (arrow 9). Recovery data provided by the USGS Bird Banding Laboratory.

extrapolate the decimation into future seasons and foresee a very bleak prospect for the region's loon population. The study of color-marked birds has been undertaken at Seney since 1987, and many active Refuge loons are well into their twenties; in 2012 the average age of banded Seney adults was, conservatively, thirteen. For me, this consideration of longevity somehow amplifies the importance of the recent carnage, particularly in the sense that a relatively narrow snapshot of the ongoing botulism scourge – one season in the documented demise of one species within one of the afflicted Great Lakes – nonetheless represents, by reasonable approximation, over 20,000 years of extinguished life.

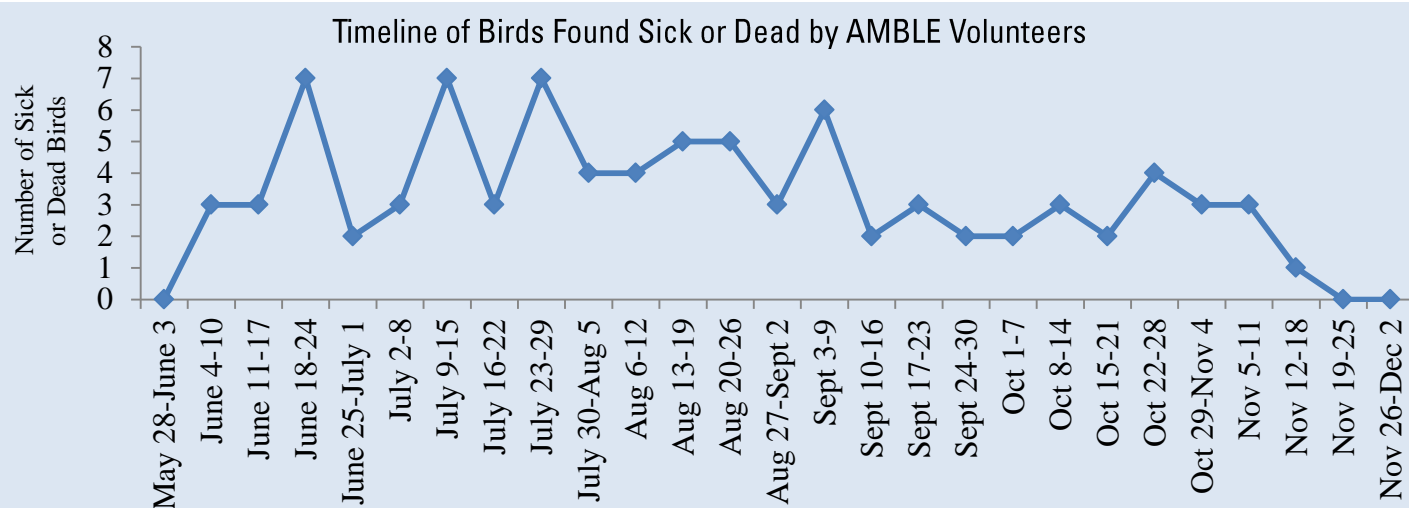
# Wisconsin Data Summary

There were 539 walking surveys reported by AMBLE volunteers during the June through November 2012 season. Multiplying the length of each beach by the number of times it was monitored results in a total of 306.8 miles walked collectively by AMBLers in 2012!

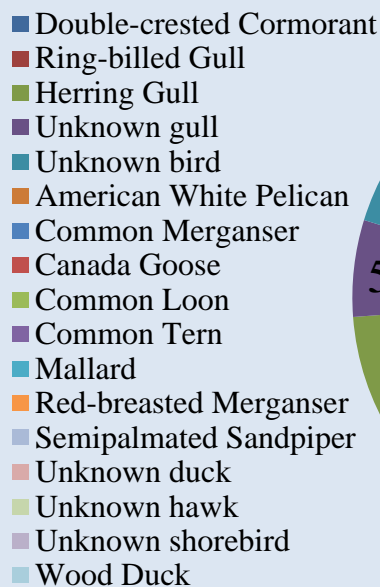
Eighty-seven sick or dead birds have been reported during this time period (see figures below). Most (54) of the dead birds found were decomposed (found > 48 hours after their death). Three sick Ring-billed Gulls have been reported, but two of these gulls had an injury and were not showing signs of botulinum poisoning. Thirty freshly dead birds have been observed: seven were dead < 24 hours and 23 were dead 24-48 hours before being found. On average, there have been 4.0 sick or dead birds observed per mile of beach monitored. Over 25,000 healthy birds have been reported, that equates to roughly 1,200 healthy birds observed per mile of beach monitored.

AMBLE volunteers have removed a total 9,367 items of trash from monitored beaches!

The Wisconsin Department of Natural Resources (DNR) Wildlife Health Section continued monitoring their circuit of Door County beaches until November 2012. They found one sick and one dead gull in June.



Species Found Sick or Dead by AMBLE Volunteers



Test Results

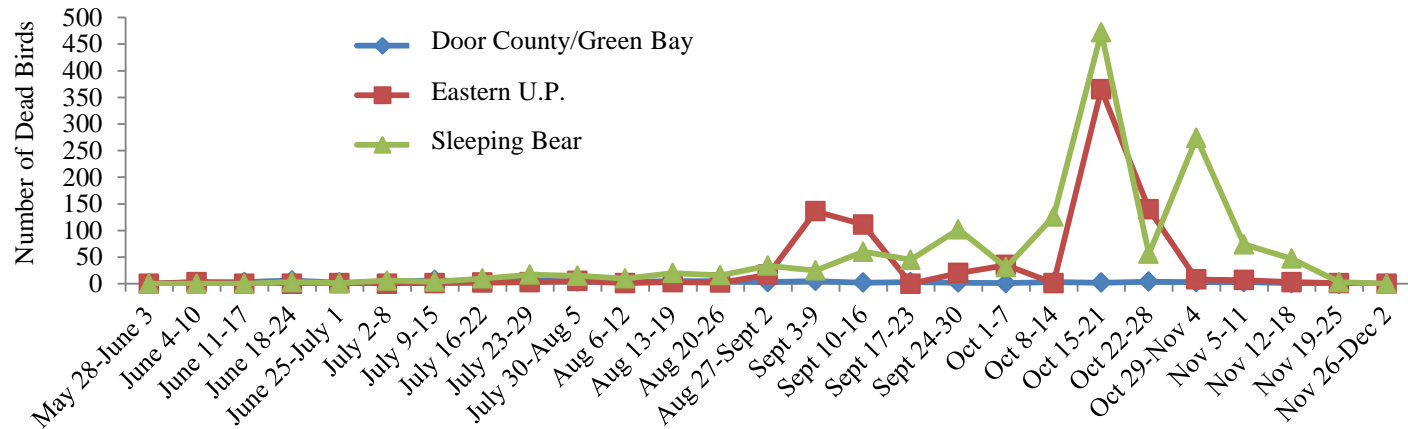
Bob Ryan (Algoma) and Ade Webber (Sturgeon Bay) each turned in a Ring-billed Gull in mid-August, with one testing positive (Algoma) and the other negative for botulism type E. Ade Webber submitted another Ring-billed Gull in October, which tested positive. A Herring Gull found sick by the Wisconsin DNR Wildlife Health monitor was submitted to Bay Beach Wildlife Sanctuary and later died; this gull tested positive for botulism type E. A Bald Eagle (Ellison Bay) and a Mallard (Green Bay) who also died at Bay Beach both tested positive for botulism type E.

# Comparing Wisconsin to Michigan

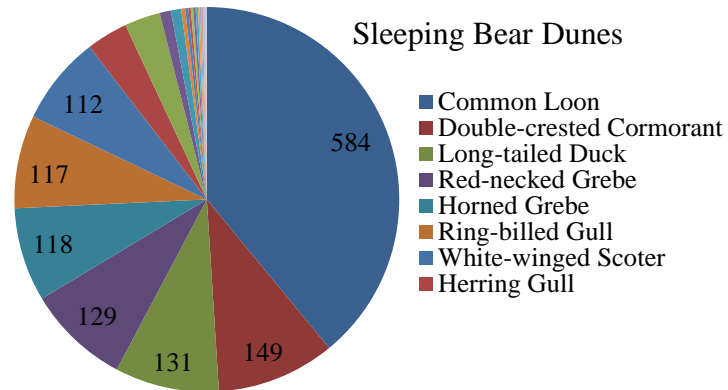
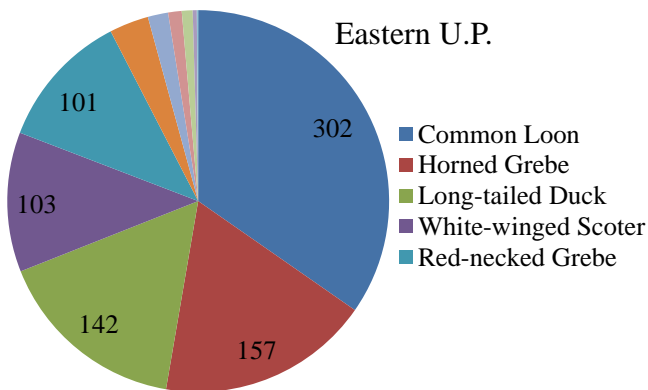
## Accounting for Differences in Miles Monitored Across Study Areas:

Study Area	Number of Sick or Dead Birds Found in 2012	Miles of Beach Monitored	Sick or Dead Birds per Miles Monitored
Door County/Green Bay, Wisconsin	87	22	4
Eastern Upper Peninsula, Michigan	871	7	124
Sleeping Bear Dunes, Michigan	1496	32	47

## Temporal Trends in Number of Birds Found Dead by Week Across Study Areas:



## Species Found Sick or Dead at Michigan Study Areas:



## Botulism in the News

December 21, 2012 – National Audubon Blog:

<http://magblog.audubon.org/avian-botulism-plaguing-lake-michigan-common-loons-suffering>

March 11, 2013 – Minnesota Public Radio:

<http://minnesota.publicradio.org/display/web/2013/03/09/environment/invasive-species-may-be-killing-loons>

Features pictures of AMBLE volunteers!



# USGS-EPA Challenge Grant Monitoring Update

Written by Zac Najacht, Biological Technician at the USGS National Wildlife Health Center

Through a grant from the Environmental Protection Agency (EPA), the USGS hired beach monitors in the spring of 2012 to conduct daily (whenever possible) shoreline walks to record live bird observations; collect environmental data; perform EPA sanitary surveys of the lake water; collect water, sediment and *Cladophora* algae samples for pathogen analysis; and submit fresh dead bird carcasses to the National Wildlife Health Center for botulism type E testing.

The aim was that this intensified frequency of monitoring, collection of comprehensive environmental data, and increased opportunity to collect and submit fresh carcass specimens for botulism type E testing might provide us with insight into the ecological pathways of the toxin that causes avian botulism. Beach monitoring took place in Wisconsin, Illinois, Indiana, Ohio, and Michigan (lower & upper peninsulas) to get a broader picture of botulism type E in the Great Lakes (see map below for sites).

The National Wildlife Health Center in Madison, Wisconsin received 36 carcass submissions through the USGS-EPA Challenge Grant and tested 30, with 12 birds testing positive for botulism type E and 1 bird positive for botulism type C. The highest numbers of positives were in Common Loons (6) and Ring-billed Gulls (4). Other species collected and tested also include Red-necked Grebes, Double-crested Cormorants, and Herring Gulls.

A few specimens arrived in too poor of a condition to test, while a few others were redirected from the research category to full diagnostic investigation and cause of death determination.

A few larger scale mortality events occurred on beaches covered by the monitors and were investigated more in depth. These areas included:

- 1) Brevort, Michigan – in the upper peninsula of Michigan where roughly 75 Red-necked Grebes and Common Loons washed up on a 7 mile section of shoreline.
- 2) Sleeping Bear Dunes National Lakeshore, Michigan – almost due east of Door County, Wisconsin, where large numbers of Common Loons were discovered in a mortality event (see page 6). USGS hired monitors joined National Park Service volunteers to increase beach monitoring at this site in 2012.

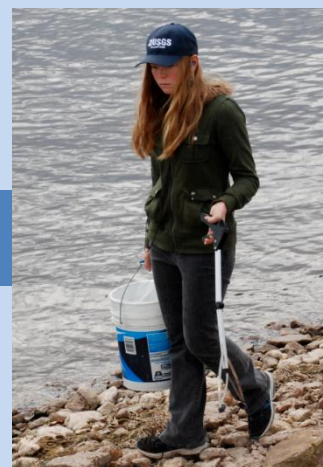
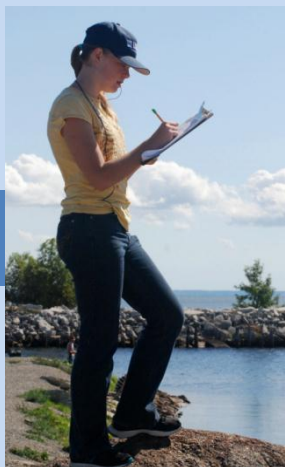
Both of these events showed no unique or distinct causes of mortality through diagnostic investigation.



Map of botulism type E testing results for carcasses collected by USGS-EPA Challenge Grant monitors on four Great Lakes in 2012. Symbol colors indicate botulism test result (positive, negative, or not tested). Four-letter codes indicate species of bird collected (COLO = Common Loon, HERG = Herring Gull, RRGU = Red-necked Grebe, RRGU = Ring-billed Gull, DCCO = Double-crested Cormorant, etc.).

# AMBLEing through High School

Written by Amber and Cordula Van Den Heuvel, AMBLE volunteers



Amber monitored the breakwater in Oconto in 2012 and wrote an essay describing her findings as part of her high school classwork. Photo credit: Cordula Van Den Heuvel.

Amber Van Den Heuvel is a freshman at Oconto Falls High School and was part of their Aquaculture and Water Ecology Class. This class belongs to the Agricultural Education Career Cluster Framework and the Cluster is called Natural Resource Systems. This is based on the Future Farmers of America system.

As a semester project, and part of their grade, the students have to find an S.A.E. Project (Supervised Agriculture Experiences) and spend 15 to 25 hours on this project. Amber used her volunteer work for AMBLE. She monitored the breakwater in Oconto this season.

In an essay assignment, Amber explained her work for AMBLE and what avian botulism is, mentioned other forms of botulism and who can be affected. She gave her class some of her personal collected data and then added data from all the other volunteers. Through that she could show her area was not very affected by botulism, but the year of 2012 was one of the worst combining the data.

Amber also mentioned how much trash she found and that this affects us all. The pictures you see were part of the project.

## Thanks to AMBLE volunteers and partners!



## Disclaimer

Information presented in this newsletter is not intended for citation as scientific literature.

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Unless otherwise noted, all writing and pictures in this newsletter are the product of Jenny Chipault, USGS National Wildlife Health Center.